

# PATENT ABSTRACTS OF JAPAN

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H01C 13/00

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(21)Application number : 08-044936 (71)Applicant : HITACHI MEDIA  
ELECTRON:KK

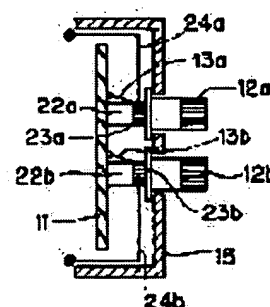
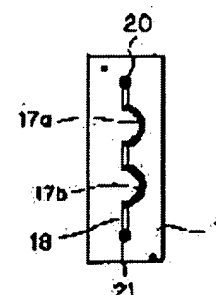
(22)Date of filing : 01.03.1996 (72)Inventor : ONODERA SHUICHI

(54) RESISTOR

(57)Abstract:

PROBLEM TO BE SOLVED: To miniaturize a resistor by constituting an output part, of a conductor part which is linked with a brush and formed in a unified body with a rotary knob and has a circumference, and of an output terminal part which is fixed to a case or the like and slides on the circumference surface of the conductor part.

SOLUTION: Rotary knobs 12a, 12b are rotatably retained by case 15. Columnar or cylindrical retainers 22a, 22b composed of electric insulator are formed in unified bodies with the knobs, on the sides facing the ceramic substrate 11. Conductor parts 23a, 23b of metal thin plates are wound around the vicinities of root parts of the retainers 22a, 22b and fixed. The root parts of the brushes 13a, 13b are collectively fixed to the vicinities of tip parts of the



conductor parts 23a, 23b. The tip parts of the brushes 13a, 13b slidably come into contact with resistors 17a, 17b. One ends of output terminal segments 24a, 24b are elastically in contact with the conductor parts 23a, 23b. A part of the segment 24a and a part of the segment 24b are retained by the case 15. Thereby the size of an insulating board which supplies a high voltage can be reduced.

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## LEGAL STATUS

[Date of request for examination] 27.12.2002

[Date of sending the examiner's  
decision of rejection]

[Kind of final disposal of application  
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rejection or application converted  
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## CLAIMS

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[Claim(s)]

[Claim 1] In the resistor equipped with an insulating substrate, the resistor of the shape of radii formed on the insulating substrate, a rotatable knob, the brush that slides on said resistor top by rotation of the rotatable knob, and the output section which the brush is slid and takes out an adjustable electrical potential difference the conductor with which said output section has the periphery side which connected with said brush and was established in a rotatable knob and one -- the section and its conductor -- the resistor characterized by consisting of the output terminal sections attached so that it might \*\*\*\* to the periphery side of the section.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the output section which the resistor for flyback transformers which supplies a screen electrical potential difference to the Braun tubes, such as a television receiver and a color display, a focal electrical potential difference and if needed is started, especially a brush is slid, and takes out an adjustable electrical potential difference.

[0002]

[Description of the Prior Art] Flyback transformers, such as a television receiver, generate the high voltage of 20-30kV, and they supply the focal electrical potential difference of 5-10kV, and the clean electrical potential difference of 100-1000V at the same time they supply the direct-current high voltage to the anode of the Braun tube.

[0003] Drawing 6 is the circuit diagram showing the connection condition of a flyback transformer and the Braun tube. One in drawing is a flyback transformer and consists of a low-tension coil 2, a high tension coil 3, and diode 4 grade. 5 -- the Braun tube -- it is -- the output sections 6a-6c of a flyback transformer 1, and it -- it it-connects. The output sections 6b and 6c are the output sections of the electrical potential difference which pressured partially by resistance included in the flyback transformer 1, and was obtained. This resistance consists of fixed resistors 7a, 7c, and 7e and variable resistors [ 7d and 7d ] combination. 8 is a film capacitor and 9 is high-pressure resistance.

[0004] Drawing 7 is the sectional view of a flyback transformer 1, and the low-tension coil 2, the high tension coil 3 which connected diode 4, and the hardening resin 16 grade are contained by the body case 10 made from plastics. The ceramic substrate 11, the rotatable knob 12 for variable resistors, the brush 13, the insulating agent 14, etc. are contained by the focal pack case 15 made from plastics. And as shown in drawing, fitting of the focal pack case 15 is carried out to the body case 10, and the flyback transformer 1

is constituted.

[0005] It is drawing of longitudinal section of the resistor by which drawing 8 used the top view of said ceramic substrate 11, and drawing 9 used the ceramic substrate 11. As shown in drawing 8, the pattern 19 for an output for a split output is formed in the location distant from the radii-like two resistors 17, the conductor 18 electrically connected with this resistor 17, and said resistor 17 on the ceramic substrate 11 of printing baking. The terminals 20 and 21 which impress an electrical potential difference to a resistor 17 are formed in the both ends of said conductor 18.

[0006] As shown in drawing 9, it is fixed to the predetermined location of the focal pack case 15, and a rotatable knob 12 counters with a ceramic substrate 11, and said ceramic substrate 11 is supported by the focal pack case 15 pivotable. By attaching a brush 13 in a rotatable knob 12, and rotating a rotatable knob 12, a brush 13 can slide on a resistor 17 top, and the high voltage can be taken out from the pattern 19 for an output in adjustable.

[0007]

[Problem(s) to be Solved by the Invention] By the way, as described above, since the resistor 17 and the pattern 19 for an output are formed on the ceramic substrate 11, the more the conventional resistor has a terminal 20 and the high electrical potential difference impressed among 21, it is necessary to, separate the distance of the pattern 19 for an output from a resistor 17 the more. Therefore, the area of a ceramic substrate 11 becomes large inevitably, and it has the fault that the miniaturization of a resistor is difficult.

[0008] This invention cancels the fault of the above-mentioned conventional technique, and aims at offering the resistor which can also miniaturize that to which the high voltage is supplied.

[0009]

[Means for Solving the Problem] This invention is aimed at the resistor equipped with insulating substrates, such as a ceramic substrate, the resistor of the shape of radii formed on the insulating substrate, a rotatable knob, the brush that slides on said resistor top by rotation of the rotatable knob, and the output section which the brush is slid and takes out an adjustable electrical potential difference in order to attain the above-mentioned purpose.

[0010] and the conductor with which said output section has the periphery side which connected with said brush and was established in a rotatable knob and one -- the section and its conductor -- it was attached in the case etc., for example, is characterized by consisting of the output terminal sections, such as a piece of an output terminal mentioned later, so that it may \*\*\*\* to the periphery side of the section.

[0011]

[Embodiment of the Invention] It becomes unnecessary for this invention to take the

distance for insulation between a resistor and the pattern for an output on an insulating substrate by losing the pattern for an output from on an insulating substrate. in addition, the conductor which constitutes a part of output section -- since the section separates from an insulating substrate and it is attached in a rotatable knob -- a conductor -- the distance for insulation of the section and a resistor is fully securable from on the conventional insulating substrate. Since it is such, what supplies the high voltage can make size of an insulating substrate small, and the miniaturization of a resistor of it is attained after all.

[0012] Hereafter, the gestalt of concrete operation of this invention is explained with a drawing. In addition, the same sign was given to the same part as the conventional example. The important section expanded sectional view of the resistor and drawing 5 of the top view of the ceramic substrate which drawing 1 requires for the gestalt of 1 operation of this invention, drawing of longitudinal section of the resistor by which drawing 2 used the ceramic substrate, the perspective view that drawing 3 cut a part of the resistor, and was lacked, and drawing 4 are the circuit diagrams of the resistor.

[0013] As the ceramic substrate 11 of this invention is shown in drawing 1, the radii-like two resistors 17a and 17b, and the conductor 18 electrically connected with these resistors 17a and 17b are formed of printing baking. The terminals 20 and 21 which impress an electrical potential difference to Resistors 17a and 17b are formed in the both ends of said conductor 18. The pattern for an output is not formed on the ceramic substrate 11 of this invention so that this drawing 1 and above-mentioned drawing 8 may be compared and understood.

[0014] the conductor which serves as the ceramic substrate 11 of the rotatable knobs 12a and 12b supported by the case 15 pivotable from an electric insulator at the side which counters as shown in drawing 2 thru/or drawing 4 and with which the cylinder-like base materials 22a and 22b consist of cylindrical or a metallic thin plate which was formed in one and fixed near the root section of the base materials 22a and 22b by twisting in the shape of a cylinder -- Sections 23a and 23b are formed.

[0015] a conductor -- root Motobe of Brushes 133a and 13b is attached near the point of Sections 23a and 23b at one, and the point of Brushes 13a and 13b \*\*\*\*s to said resistors 17a and 17b. moreover, a conductor -- the end of the pieces 24a and 23b of an output terminal touches elastically so that it may not interfere in Sections 23a and 23b with rotation actuation of Brushes 13a and 13b, and although not illustrated, a part of pieces 24a and 23b of an output terminal are supported by the case 15. And as shown in drawing 5, a screen electrical potential difference is taken out for a focal electrical potential difference from piece of output terminal 24a from piece of output terminal 24b, respectively.

[0016] the conductor which consists of a metallic thin plate on base material 22a and 22b

with the gestalt of this operation -- although Sections 23a and 23b were twisted in the shape of a cylinder and it fixed -- the conductor of the shape of cylindrical or a cylinder -- outsert shaping can be carried out and Sections 23a and 23b can also be fixed to the shank of rotatable knobs 12a and 12b.

[0017] the gestalt of this operation -- Brushes 13a and 13b and a conductor -- although Sections 23a and 23b were used as another object, forming in one is also possible.

[0018] Although the piece of an output terminal was used as the output terminal section with the gestalt of this operation, it is also possible to use the brush-like output terminal section.

[0019] Although the gestalt of this operation explained the resistor for flyback transformers, this invention is applicable also to the resistor of other applications.

[0020]

[Effect of the Invention] It becomes unnecessary for this invention to take the distance for insulation between a resistor and the pattern for an output on an insulating substrate by losing the pattern for an output from on an insulating substrate. in addition, the conductor which constitutes a part of output section -- since the section separates from an insulating substrate and it is attached in a rotatable knob -- a conductor -- the distance for insulation of the section and a resistor is fully securable from on the conventional insulating substrate. Since it is such, what supplies the high voltage can make size of an insulating substrate small, and the miniaturization of a resistor of it is attained after all.

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**TECHNICAL FIELD**

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## PRIOR ART

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**EFFECT OF THE INVENTION**

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## TECHNICAL PROBLEM

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## MEANS

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the top view of a ceramic substrate used for the resistor concerning the gestalt of 1 operation of this invention.

[Drawing 2] It is drawing of longitudinal section of the resistor.

[Drawing 3] It is the perspective view which cut and lacked a part of the resistor.

[Drawing 4] It is the important section expanded sectional view of the resistor.

[Drawing 5] It is the circuit diagram of the resistor.

[Drawing 6] It is the circuit diagram showing connection between a flyback transformer and the Braun tube.

[Drawing 7] It is the sectional view of a flyback transformer.

[Drawing 8] It is the top view of a ceramic substrate used for the conventional resistor.

[Drawing 9] It is drawing of longitudinal section of the resistor.

[Description of Notations]

1 Flyback Transformer

6b, 6c Output section

7b, 7d Variable resistor

11 Ceramic Substrate

12 Rotatable Knob

13 Brush

17a, 17b Resistor

20 21 Terminal

22a, 22b Base material

23a and 23b a conductor -- the section

24a, 24b Piece of an output terminal

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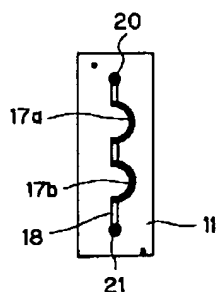
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## DRAWINGS

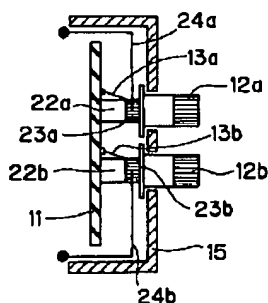
[Drawing 1]

【図 1】



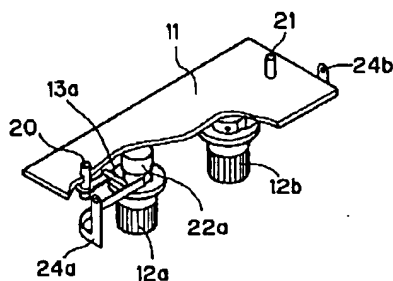
[Drawing 2]

【図 2】



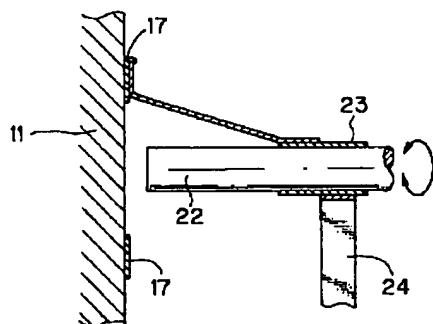
[Drawing 3]

【図 3】



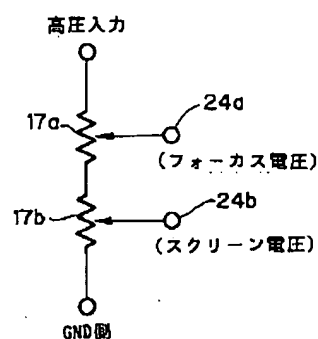
[Drawing 4]

【図4】



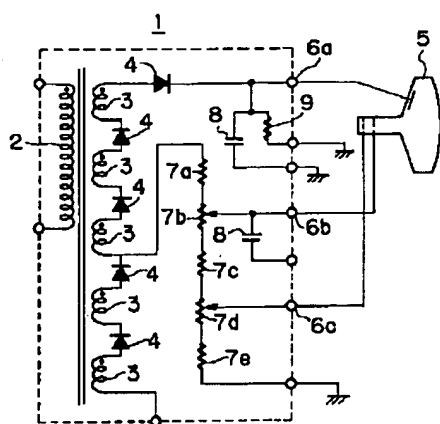
[Drawing 5]

【図5】



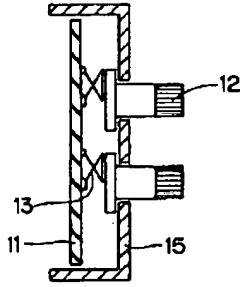
[Drawing 6]

【図6】



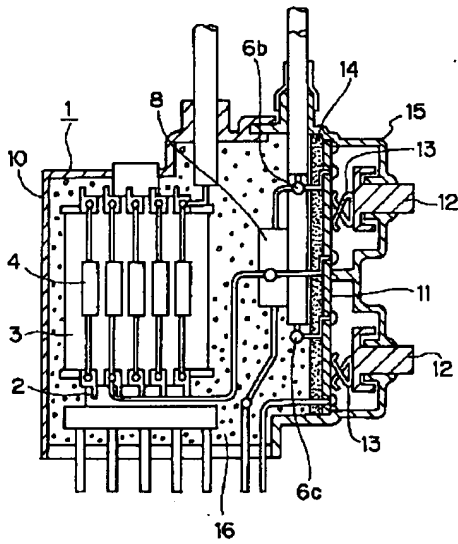
[Drawing 9]

【図9】



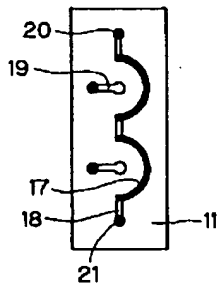
[Drawing 7]

【図7】



[Drawing 8]

【図8】



[Translation done.]

(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平9-246021

(43) 公開日 平成9年(1997)9月19日

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1/14			1/14	V

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(21) 出願番号 特願平8-44936

(22) 出願日 平成8年(1996)3月1日

(71) 出願人 000153535

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日立メディアエレクトロニクス内

(74) 代理人 弁理士 武 顕次郎

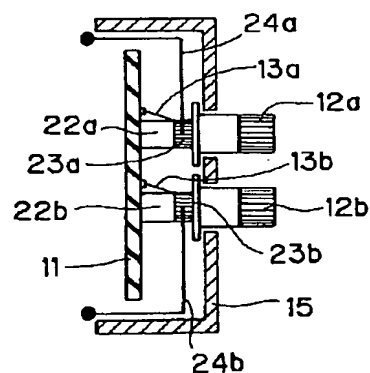
(54) 【発明の名称】 抵抗器

(57) 【要約】

【課題】 高電圧を供給するものにおいても小型化が可能な抵抗器を提供する。

【解決手段】 絶縁基板11と、その絶縁基板11上に形成された円弧状の抵抗体17と、回転ノブ12と、その回転ノブ12の回転により前記抵抗体17上を摺動するブラシ13と、そのブラシ13を摺動させて可変電圧を取り出す出力部6とを備えた抵抗器において、前記出力部6が、前記ブラシ13と連結して回転ノブ12と一体に設けられた円周面を有する導体部23と、その導体部23の円周面と摺接するように取り付けられた出力端子部24とから構成されていることを特徴とする。

【図2】



## 【特許請求の範囲】

【請求項1】 絶縁基板と、その絶縁基板上に形成された円弧状の抵抗体と、回転ノブと、その回転ノブの回転により前記抵抗体上を摺動するブラシと、そのブラシを摺動させて可変電圧を取り出す出力部とを備えた抵抗器において、前記出力部が、前記ブラシと連結して回転ノブと一体に設けられた円周面を有する導体部と、その導体部の円周面と摺接するように取り付けられた出力端子部とから構成されていることを特徴とする抵抗器。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】本発明は、例えばテレビジョン受像機、カラーディスプレイ等のブラウン管にフォーカス電圧及び必要に応じてスクリーン電圧を供給するフライバックトランス用の抵抗器に係り、特にブラシを摺動させて可変電圧を取り出す出力部に関するものである。

## 【0002】

【従来の技術】テレビジョン受像機等のフライバックトランスは、20～30KVの高電圧を発生し、ブラウン管のアノードに直流高電圧を供給すると同時に5～10KVのフォーカス電圧、100～1000Vのクリーン電圧を供給している。

【0003】図6はフライバックトランスとブラウン管の接続状態を示す回路図である。図中の1はフライバックトランスで、低圧コイル2、高圧コイル3、ダイオード4等から構成されている。5はブラウン管で、フライバックトランス1の出力部6a～6cとそれぞれ接続されている。出力部6b、6cは、フライバックトランス1に組み込んだ抵抗により分圧して得た電圧の出力部である。この抵抗は固定抵抗器7a、7c、7eと可変抵抗器7d、7dの組み合わせで構成されている。8はフィルムコンデンサ、9は高圧抵抗である。

【0004】図7はフライバックトランス1の断面図で、低圧コイル2、ダイオード4を接続した高圧コイル3、硬化樹脂16等がプラスチック製の本体ケース10に収納されている。セラミック基板11、可変抵抗器用回転ノブ12、ブラシ13、絶縁剤14などがプラスチック製のフォーカスバックケース15に収納されている。そして図に示すようにフォーカスバックケース15が本体ケース10に嵌合されて、フライバックトランス1を構成している。

【0005】図8は前記セラミック基板11の平面図、図9はそのセラミック基板11を用いた抵抗器の縦断面図である。図8に示すようにセラミック基板11上には、円弧状の2つの抵抗体17と、この抵抗体17と電気的に接続された導体18と、前記抵抗体17から離れた位置に分割出力のための出力用パターン19とが印刷

焼成により形成されている。前記導体18の両端部には、抵抗体17に電圧を印加する端子20、21が設けられている。

【0006】図9に示すように、前記セラミック基板11はフォーカスバックケース15の所定位置に固定され、また回転ノブ12がセラミック基板11と対向してフォーカスバックケース15に回転可能に支持されている。回転ノブ12にはブラシ13が取り付けられ、回転ノブ12を回転することにより、抵抗体17上をブラシ13が摺動して、出力用パターン19から可変的に高電圧を取り出すことができる。

## 【0007】

【発明が解決しようとする課題】ところで上記したように従来の抵抗器は、抵抗体17と出力用パターン19がセラミック基板11上に形成されていることから、端子20、21間に印加する電圧が高ければ高いほど、抵抗体17と出力用パターン19の距離を離す必要がある。そのためにセラミック基板11の面積が必然的に広くなり、抵抗器の小型化が難しいという欠点を有している。

【0008】本発明は、上記従来技術の欠点を解消し、高電圧が供給されるものでも小型化が可能な抵抗器を提供することを目的とする。

## 【0009】

【課題を解決するための手段】上記目的を達成するために、本発明は、例えばセラミック基板などの絶縁基板と、その絶縁基板上に形成された円弧状の抵抗体と、回転ノブと、その回転ノブの回転により前記抵抗体上を摺動するブラシと、そのブラシを摺動させて可変電圧を取り出す出力部とを備えた抵抗器を対象とするものである。

【0010】そして前記出力部が、前記ブラシと連結して回転ノブと一体に設けられた円周面を有する導体部と、その導体部の円周面と摺接するようにケースなどに取り付けられた、例えば後述する出力端子片などの出力端子部とから構成されていることを特徴とするものである。

## 【0011】

【発明の実施の形態】本発明は、絶縁基板上から出力用パターンを無くすことにより、絶縁基板上で抵抗体と出力用パターンとの間の絶縁距離をとる必要がなくなる。なお、出力部の一部を構成する導体部は絶縁基板から離れて回転ノブに取りつけられるから、導体部と抵抗体との絶縁距離は従来の絶縁基板上よりも十分に確保することができる。このようなことから高電圧を供給するものでも絶縁基板のサイズを小さくすることができ、結局、抵抗器の小型化が可能となる。

【0012】以下、本発明の具体的な実施の形態を図面とともに説明する。なお、従来例と同一箇所には同一符号を付した。図1は本発明の一実施の形態に係るセラミック基板の平面図、図2はそのセラミック基板を使用し

た抵抗器の縦断面図、図3はその抵抗器の一部を切り欠いた斜視図、図4はその抵抗器の要部拡大断面図、図5はその抵抗器の回路図である。

【0013】本発明のセラミック基板11は図1に示すように、円弧状の2つの抵抗体17a、17bと、この抵抗体17a、17bと電気的に接続された導体18とが印刷焼成により形成されている。前記導体18の両端部には、抵抗体17a、17bに電圧を印加する端子20、21が設けられている。この図1と前述の図8を比較して分かるように、本発明のセラミック基板11上に出力用パターンは形成されていない。

【0014】図2ないし図4に示すように、ケース15に回転可能に支持された回転ノブ12a、12bのセラミック基板11と対向する側には電気絶縁体からなる円柱状または円筒状の支持体22a、22bが一体に形成され、その支持体22a、22bの付根部付近に円筒状に巻き付けて固定された金属薄板からなる導体部23a、23bが設けられている。

【0015】導体部23a、23bの先端部付近にはブラシ13a、13bの根元部が一体に取りつけられ、ブラシ13a、13bの先端部が前記抵抗体17a、17bと摺接する。また導体部23a、23bにはブラシ13a、13bの回転動作とは干渉しないように出力端子片24a、23bの一端が弾性的に接触しており、図示していないが出力端子片24a、23bの一部はケース15に支持されている。そして図5に示すように、出力端子片24aからフォーカス電圧が、出力端子片24bからスクリーン電圧がそれぞれ取り出される。

【0016】この実施の形態では、支持体22a、22b上に金属薄板からなる導体部23a、23bを円筒状に巻き付けて固定したが、円筒状あるいは円柱状の導体部23a、23bを回転ノブ12a、12bの軸部にアウトサート成形して固定することもできる。

【0017】この実施の形態では、ブラシ13a、13bと導体部23a、23bを別体としたが、一体に形成することも可能である。

【0018】この実施の形態では、出力端子部として出力端子片を用いたが、ブラシ状の出力端子部を用いることも可能である。

【0019】この実施の形態ではフライバックトランス用の抵抗器について説明したが、本発明は他の用途の抵抗器にも応用可能である。

【0020】

【発明の効果】本発明は、絶縁基板上から出力用パターンを無くすことにより、絶縁基板上で抵抗体と出力用パターンとの間の絶縁距離をとる必要がなくなる。なお、出力部の一部を構成する導体部は絶縁基板から離れて回転ノブに取りつけられるから、導体部と抵抗体との絶縁距離は従来の絶縁基板上よりも十分に確保することができる。このようなことから高電圧を供給するものでも絶縁基板のサイズを小さくすることができ、結局、抵抗器の小型化が可能となる。

【図面の簡単な説明】

【図1】本発明の一実施の形態に係る抵抗器に用いるセラミック基板の平面図である。

【図2】その抵抗器の縦断面図である。

【図3】その抵抗器の一部を切り欠いた斜視図である。

【図4】その抵抗器の要部拡大断面図である。

【図5】その抵抗器の回路図である。

【図6】フライバックトランスとブラウン管との接続を示す回路図である。

【図7】フライバックトランスの断面図である。

【図8】従来の抵抗器に用いるセラミック基板の平面図である。

【図9】その抵抗器の縦断面図である。

【符号の説明】

1 フライバックトランス

6b、6c 出力部

7b、7d 可変抵抗器

11 セラミック基板

12 回転ノブ

13 ブラシ

17a、17b 抵抗体

20、21 端子

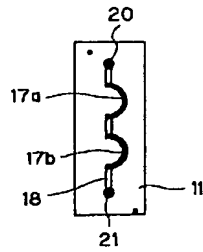
22a、22b 支持体

23a、23b 導体部

24a、24b 出力端子片

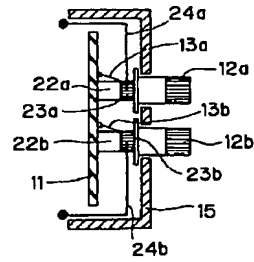
【図1】

【図1】



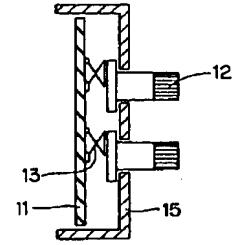
【図2】

【図2】



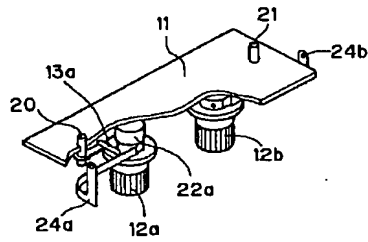
【図9】

【図9】



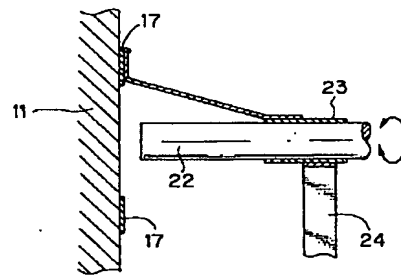
【図3】

【図3】



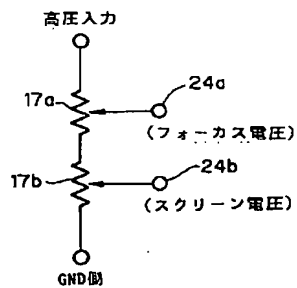
【図4】

【図4】



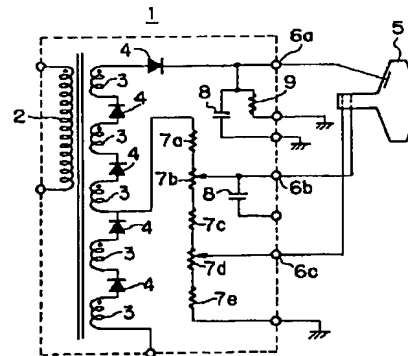
【図5】

【図5】



【図6】

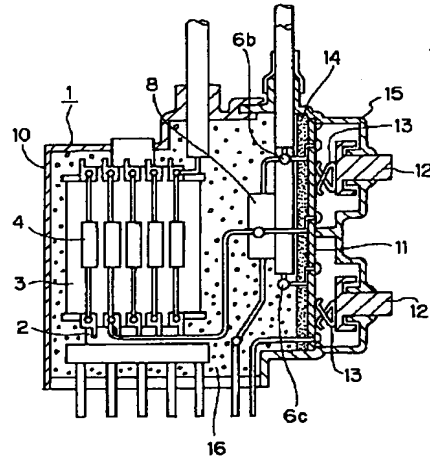
【図6】





【図7】

【図7】



【図8】

【図8】

